



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/557,920

11/22/2005

Olivier Simon

SIMON13

4807

1444 7590 07/08/2008  
BROWDY AND NEIMARK, P.L.L.C.  
624 NINTH STREET, NW  
SUITE 300  
WASHINGTON, DC 20001-5303

EXAMINER

KEYS, ROSALYND ANN

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

07/08/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/557,920	<b>Applicant(s)</b> SIMON ET AL.	
	<b>Examiner</b> ROSALYND KEYS	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-26 are pending.

Claims 1-26 are rejected.

### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 20, 2008 has been entered.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6, 11, 20-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent

protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 6 recites the broad recitation approximately 10°C to 60°C, and the claim also recites preferably at ambient temperature which is the narrower statement of the range/limitation; In the present instance, claim 11 recites the broad recitation molar ratio being between 10/1 and 50/1, and the claim also recites preferably 10/1 to 30/1 which is the narrower statement of the range/limitation; In the present instance, claim 20 recites the broad recitation for a period of time of less than or equal to 1 h, and the claim also recites preferably of less than or equal to 40 min. which is the narrower statement of the range/limitation; and In the present instance, claim 22 recites the broad recitation at a temperature of the order of 60°C to 140°C, and the claim also recites preferably approximately 80°C to 130°C which is the narrower statement of the range/limitation.

6. Claims 21 and 23-25 are indefinite because they depend from an indefinite claim. *Ex parte Cordova*, 10 U.S.P.Q.2d 1949, 1952 (P.T.O. Bd. App. 1989).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heydrich et al. (US 2003/0069451 A1) in view of Purves (US 2,194,405), Wessendorf et

al. (US 4,065,506), and Babler (US 5,191,127) and further in view of van Dijck (US 2,081,719).

Heydrich et al. teach preparation of diacetals of glyoxal by reacting from 40 to 75% by weight aqueous glyoxal with monohydric alcohols in the presence of an acid catalyst (see entire disclosure, in particular paragraphs 0002-0004, 0008-0014, 0016, 0021, 0027-0030, 0032-0040 and the examples). It is taught that the monoacetal is formed in addition to the diacetal (see paragraph 0004). Concentration of a commercial aqueous glyoxal is taught in paragraph 0021. Temperature and pressures of acetalization are taught in paragraph 0032. It is taught that the diacetal may be recovered and removed from coproduced monoacetal and any higher molecular weight by-products, which generally involves distillation (see paragraph 0035). Any differences in process conditions are within the level of one having ordinary skill in the art at the time of the invention and are a matter of routine optimization, absent a showing of unexpected results. Changes in temperature, concentrations, or other process conditions of an old process do not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. *In re Aller et al.*, (CCPA 1955) 220 F2d 454, 105 USPQ 233.

Heydrich et al. differ from the instant invention in that Heydrich et al. teach that glyoxal diacetal may be recovered in any customary manner (see paragraph 0036), whereas the recovery in the instant claims is limited to countercurrentwise liquid-liquid extraction.

Purves teaches that glyoxal tetramethyl acetal may be removed from neutral or alkaline aqueous solution free from methanol by prolonged extraction with a low boiling organic solvent, immiscible, or nearly so, with water, e.g. diethyl ether.

Wessendorf et al. teach a process for refining a glyoxal, specifically glyoxal semiacetal by continuous counterflow extraction using solvents, which are insoluble or sparingly soluble in water including halogenated hydrocarbons such as methylene chloride, aromatic hydrocarbons such as toluene and cyclaliphatic hydrocarbons such as cyclohexane (see entire disclosure, in particular column 3, lines 3 to 64).

Babler teaches isolation of glyoxal bis(diethyl acetal), a glyoxal diacetal of formula (I), by extraction with methylene chloride (see Example II). Babler inherently teaches the presence of a glyoxal monoacetal of formula (II), since Babler prepares the glyoxal bis(diethyl acetal) in the same manner as the claimed glyoxal diacetal of formula (I), see column 2, line 40 to column 3, line 13).

Van Dijck teaches that it is known to extract certain components from liquids by extraction with a solvent and that such extraction may be carried out counter-currently (see entire disclosure, in particular column 1, lines 4-7). Van Dijck further teaches that the most favorable results are obtained by treating the liquid mixture to be separated with a sufficiently selective solvent in counter-current (see column 1, lines 15-19).

One having ordinary skill in the art at the time the invention was made would have found it obvious to recover the glyoxal diacetals of Heydrich et al. by extraction, as taught by either, Purves, Wessendorf et al. or Babler, since Heydrich et al. teach that

the glyoxal diacetal may be recovered in a customary manner and each of Purves, Wessendorf et al. and Babler show the extraction is an effective means for isolating an glyoxal acetal compound. The skilled artisan would have found it obvious to perform the extraction with the water immiscible organic solvent in a countercurrent manner, as taught by van Dijck, since van Dijck teaches that such method of extraction is known and the skilled artisan would have been further motivated to carry out the extraction in a countercurrent manner since van Dijck further teaches that the most favorable results are obtained by treating the liquid mixture to be separated with a sufficiently selective solvent in counter-current.

### ***Response to Arguments***

*Rejection of claims 1-3 under U.S.C. 103(a) as being unpatentable over Babler (S 5,197,127) in view of Wessendorf et al. (US 4,065,506)*

11. This rejection is being withdrawn in favor of the rejection disclosed herein, as the Examiner believes that the rejection disclosed herein represents the best available art.

*Rejection of claims 1-26 under 35 U.S.C. 103(a) as being unpatentable over Heydrich et al. (US 2003/0069451 A1) in view of Purves (US 2,194,405), Wessendorf et al. (US 4,065,506), and Babler (US 5,191,127) and further in view of van Dijck (US 2,081,719)*

12. Applicant's arguments filed May 20, 2008 have been fully considered, but they are not persuasive.



The applicants argue that Heydrich neither teaches nor suggests a countercurrent liquid-liquid extraction. This is true and that is why the Examiner relies on Van Dijck.

The Applicants argue that Purves does not disclose any of the components of the aqueous reaction mixture from the herein claimed process aims for selectively separating glyoxal diacetal. The Examiner disagrees. Purves discloses both water and a glyoxal diacetal and the other components present in the mixture of Purves are close in structure to the other components of Heydrich. Thus, the skilled artisan would reasonably expect that the extraction method of Purves would be suitable for recovery of the glyoxal of Heydrich.

The Examiner disagrees that Babler is not relevant for the reasons given above.

The Examiner believes that Van Dijck does add to the cited references for the reasons given above.

The Examiner believes that claims 1-26 are prima facie obvious for the reasons given above.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROSALYND KEYS whose telephone number is (571)272-0639. The examiner can normally be reached on M, R & F 5:30-7:30 am & 1-5 pm; T & W 5:30 am-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROSALYND KEYS/  
Primary Examiner, Art Unit 1621

July 6, 2008